

# EXCAVATIONS AT MAIORO, N51/5, SOUTH AUCKLAND, 1965-66

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*Abstract.* Excavations by R.C. Green in 1965-66 are described by Aileen Fox. The site is a scarped enclosure on a defensible knoll, near the west coast of the North Island of New Zealand and the ancient portage from the Manukau Harbour to the Waikato River. It was in the well populated territory of the Ngati Kahukoka, a sub-tribe of the Wai-o-hua. Excavations revealed four phases of occupation, shown by a succession of storage pits. The first was probably an open settlement; in the second the summit platform was scarped and defended by a palisade; a sleeping house with an associated working floor and a cooking shed were built. The defences were subsequently reconstructed and pits were replaced. In the final phase pit storage was outside the enclosure where one large pit with elaborate timberwork was examined. Radiocarbon dates are not yet available.

The excavations at Maioro were planned by Roger Green as a continuation of his previous work at the open settlement near Kauri Point in the Bay of Plenty (Green 1963). The object of this sustained research was to define and date a variety of Maori open settlements in New Zealand which at that time were little understood or appreciated. At Maioro it was intended to examine a type of small terraced settlement which lacked the obvious earthwork defences of a pa, but unlike that at Kauri Point, was placed in a defensible position. The site also provided an opportunity to explore the layout of a summit platform (*tihi*), with its implications for the organisation and the use of resources by a Maori community of hamlet size.

Maioro was selected because it lay in an area of South Auckland where no excavation had previously taken place and where field survey had shown there was a concentration of similar types of settlement, as well as fortified pa (Figs. 1,2). This has since been confirmed by an examination of air photographs by Steve Edson, New Zealand Archaeological Association filekeeper for the Waikato, and by a ground check in 1982 by Fox.

The excavations were carried out from 26 December 1965 to 15 January 1966 with students and other members of the University of Auckland Archaeological Society under the direction of Roger Green. The owner of the site, Mr C. Thompson, willingly gave permission for the work and a field camp near his farmhouse. Moreover, he took a keen interest in the excavations, and was most helpful throughout, especially when it came to backfilling the excavations with his farm tractor. Funds to support the excavation were supplied by a grant from a special Pacific Research Fund of the University of Auckland. In 1968, Green left New Zealand and was subsequently unable to complete his report. In 1981, it was suggested that Fox, Honorary Archaeologist at Auckland Institute and Museum where the Maioro material had been deposited, might write up the results and

this has now been done. The report which follows is in essence a joint work, being based on the original field notebooks, plans and sections. The published illustrations incorporate some minor amendments and the text contains reinterpretations in the light of recent developments and of the specialists' reports.

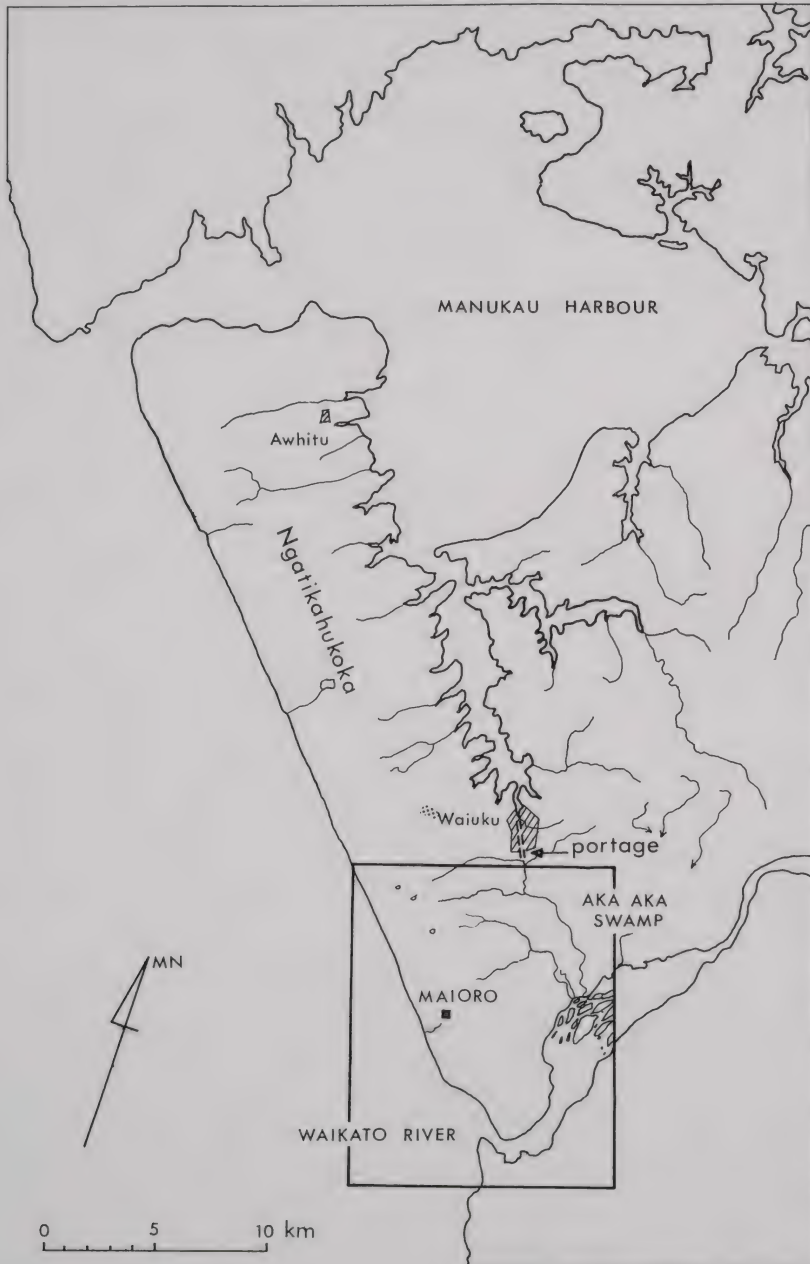


Fig. 1. Location map. For enclosed area, see Fig. 2.

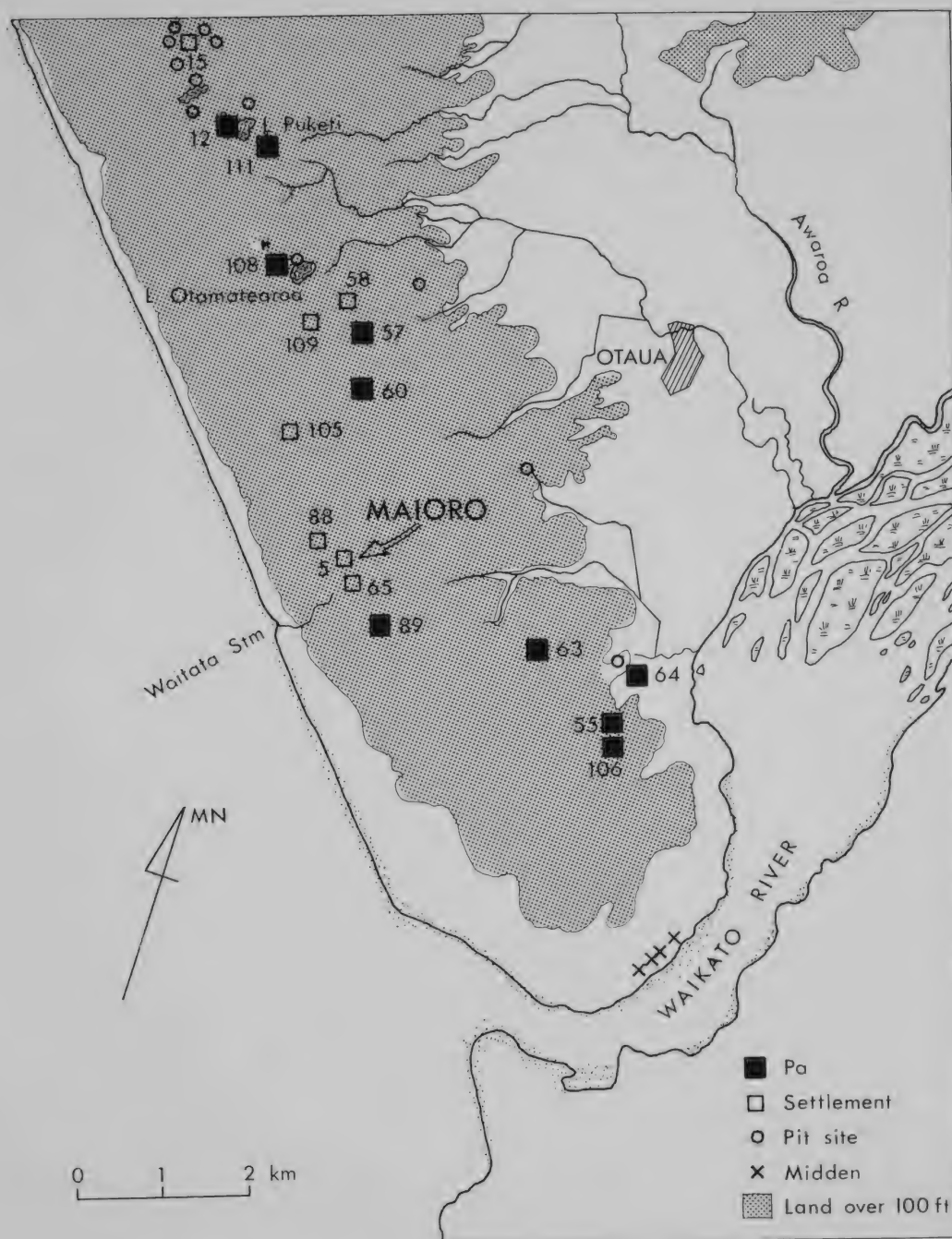


Fig. 2. Distribution of Maori sites in the Maioro district. The numbers refer to the N.Z. Archaeological Association site records on map N.51 Onewhero.

*The setting* (Figs. 1,2)

Maioiro is situated near the southern end of an undulating sandstone ridge 100-200 m high that extends from South Manukau Head to the mouth of the Waikato River, lying parallel to the coast (Fig. 2). On the west side of the ridge, which is 4-5 km wide in the vicinity of the site, there is a steep escarpment with rocky exposures above a broad tract of sand dunes behind the present beach. The line of cliffs and dunes is broken by the small valley of the Waitata Stream known as the Maioiro gap, which affords a landing place for canoes in fair weather. The eastern side of the ridge slopes gradually towards the modern township of Otatau and to the extensive alluvial flats along the lower Waikato River; these have been drained for farmland but in early times would have been swamp, probably with some narrow channels of open water. In the mid-nineteenth century there was a well known trade-route from Hood's Landing on the river through the Aka Aka swamp by the Awaroa River and then across the low saddle of land to Waiuku at the head of an inlet of the Manukau Harbour (Fig. 1). From there it was an easy journey by canoe to Onehunga. Goods to and from the Waikato were sent by this trans-peninsula route to Auckland (Sorrenson 1981:172), utilising the portage known to be of prehistoric origin. The settlement at Maioiro and others in the neighbourhood therefore were not in a cultural backwater but in an area adjoining an important line of communication.

According to Maori tradition as related to John White (1888:116) in the late nineteenth century, the coastal zone was settled by the Ngati Kahukoka, a people belonging to the Wai-o-hua tribal confederacy of the Auckland Isthmus.

“... the Nga-ti-kahu-koka were a brave and numerous tribe, and occupied the district from the entrance of the Manuka to the entrance of the Waikato River. They occupied many stockades (*pa*), some of which were on the peaks of the hills; others were built on stages erected in the lakes and swamps which are situated between Waiuku and the Maioiro. But the principal *pa* or home of the tribe stood on the peaks of the hills, Puketapu and Titi, which were inland; and the stockades (*pa*) occupied by those who procured fish for the tribe were at Awhitu and Tipitai, near the entrance of Manuka”

Later another element in the population was the Ngati Teata, who acquired lands on the eastern Manukau in consequence of the marriage of a chieftainess, Te Ata-irehia, with a warrior, Tapaue, from the Waikato. She was the daughter of Huatau from Motukutureia pa (McLaughlin's Mountain). In the mid-eighteenth century, the Ngati Teata became the dominant force in the Waiuku area (Kelly 1949:243, 248; Muir 1980:1). According to White's informant, the name ‘Maioiro’ means ‘ditch outside of a pa’ (White 1888:116). This is perhaps a reference to the Maioiro gap, the narrow valley of the Waitata stream leading down to the coast.

Field surveys have shown that the district south of Waiuku was well populated by the Ngati Kahukoka. The sites are confined to the higher ground of the sandstone ridge, with marked clusters near the small lakes behind the dunes, Lakes Whatihua, Puketi, Otamatea and Parkinson's (Fig. 2). The fortified sites include three terraced pa N51/55, 57, and 60; the remainder have simple transverse defences, consisting of a ditch with a low internal bank above a steep artificial scarp. None are of the size and elaboration of the Kohekohe ridge pa, north of Waiuku N46-7/21 (Law 1969); though N51/12 situated on the narrow ridge between lakes Puketi and Rotoiti effectively combines three separate lines of transverse ditches and banks with terracing leading up to a prominent summit platform. Another sophisticated fortification is the ridge pa N51/89, with earthworks at each end,



featuring an external bank, suggestive of musket warfare. This pa may be the work of Ngati Teata in the late eighteenth or early nineteenth century. In general the fortifications are low key and rely more on natural defence than on the earthworks; from this it can be deduced that full use was made of palisades as a means of perimeter defence.

There are several hilltop settlements that, like Maioro, are defensively sited but lack earthwork defences (N51/15, 58, 88, 105; Fig. 2); excavations would probably reveal that these were also palisaded. The present classification, based on surface appearance is in this respect probably misleading and both types of site would be recognised by the Maori as a pa. There are many rectangular storage pits in the settlements, some very large, up to 12 x 10 m, and rock-cut (N51/105). There are also isolated pits and pit groups, some of which may belong to small open settlements. The Maori garden plots have not survived the intensive European farming and enclosures, but the pits show that much of the light friable soils of the sandstone ridge were extensively planted with kumara.

### *Geology and soils*

The underlying rock is a cream coloured sandstone, a sedimentary rock of non-marine origin of the upper Wanganui series (N.Z. Soil Bureau 1973). In exposures in road cuttings it is covered by 1-1.5 m of soil which varies in colour from orange to a yellowish brown. On the Maioro ridge, the soil is dark brown, of a fine silky texture and very friable. Samples were submitted through Mr E. Cox of the D.S.I.R. Soil Bureau in Auckland to Dr G.E. Orbell, the northern regional pedologist at Ruakura, Hamilton, who reports as follows:

'The soils lie within the concept of the Red Hill soil set (24c Red Hill sandy clay loam) of Soil Bureau Bulletin 5 (1954) and are classified as a yellow-brown sand. The parent material for this soil is weathered sands with an admixture of volcanic ash. The sands are derived from coastal dunes blown up to high levels by way of sand ramps in the past. These coastal sands are derived from a variety of parent rocks including volcanics of various soils and contain many ferromagnesium minerals derived from volcanoes such as Mount Egmont. There is also the known presence of airfall rhyolitic volcanic ash beds derived from the Rotorua-Taupo region, (Hamilton Ash formation, Late quaternary volcanic ashes) and even small additions of airfall Taupo pumice, all or some of which may have been incorporated into the original sands or later mixed with the soils during any soil creep, or even cultivation, periods.

Generally speaking these soils would only be of medium to low natural fertility and have low plant available phosphorus and potassium. Physical limitations to plant growth include low plant available water (the soils are droughty) and the liability to wind erosion under open cultivation system including extensive burning operations.'

### *Site description (Fig. 3)*

The scarped enclosure was sited on a conspicuous square-topped knoll, which rises from a 100 m high ridge between the Waitata Stream and a small tributary (Fig. 4): the site is *ca.* 1 km inland from the coast (Fig. 2). Both sides of the ridge fall steeply to the flat valley floors which until recently were swamps. The easy line of approach was from the south-west along the narrow ridge top which was blocked at the foot of the knoll by a transverse scarp (Fig. 5), and as the excavations showed, by palisades. These defences enclosed a rectangular summit platform measuring 18 x 14 m which was divided midway by a low transverse scarp. On the north-west side, the main defensive scarp was continued downhill to form a lower enclosure 25 x 12 m containing six visible storage pits. North of the enclosure the ridge is broken by a small steep-sided gully and a spring which flows east; these afford a good natural defence to the hilltop site from the north-east and consequently

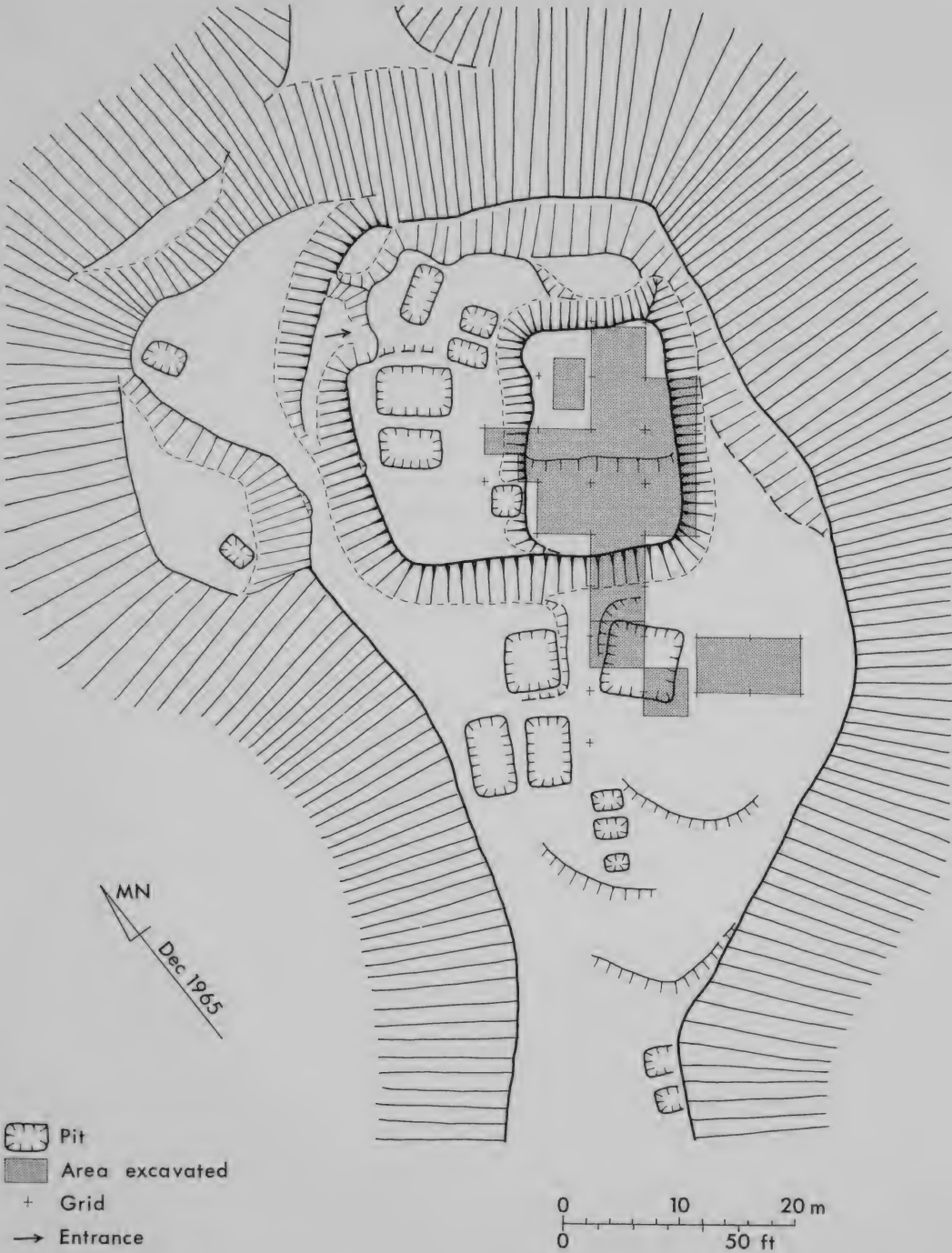


Fig. 3. Site plan of Maioro (N.51/5 G.R. 216 021). Stippling shows the areas excavated.



Figs. 4,5. 4. View of Maioro from the south. 5. View of Maioro looking north-east along the ridge. (Photos A. Fox)



the scarping of the lower enclosure ends at this point. The entrance appears to be on the northern slopes through a recess in the scarp of the lower enclosure indicated by an arrow on Fig. 3. There was no obvious entry in the summit scarps but excavation indicated a narrow gap in the palisade in the middle of the north-eastern slopes, flanked externally by timberwork (Fig. 6). To reach it, all comers would have to pass close to the foot of the palisaded scarp, within range of missiles from the defenders, before ascending the final steep slope to the gateway.

Outside the defended zone there are three terraces on the lower slopes on the north-western side, two of which contain a visible storage pit. On the ridge top to the south-west there is a group of four large and three small pits including the 6 m square pit 10 which was excavated (Fig. 15), as well as some slight indications of terracing. There is a spill of shell midden exposed at the edge of the south-east slopes. Surprisingly there is no sign of an earthwork defence where the ridge dips slightly and narrows to 12 m, so that access to the summit platform from this direction is easy (Fig. 5), making the site difficult to classify as a pa on surface evidence alone. There are two other groups of pits and terraces further along the ridge (Site N51/65) showing that the area was well populated and cultivated despite the absence of surface indications of drains or divisions for garden plots. The friable sandy soils would have been easy to clear and to cultivate. Other advantages of the site were easy access to the coast by way of the Maioro gap for sea fishing in calm weather. Eels would be obtainable in the nearby swamps and shellfish from the beaches at the mouth of the Waikato, where there are middens (Fig. 2), or from the eastern side of Manukau Harbour.

#### *Aims and methods of excavation*

The area investigated consisted of the greater part of the summit platform (*tahi*), with extensions to cross-section the perimeter scarps on three sides (Figs. 3, 6). The intention was to obtain evidence for the lay-out of a *tahi* and to ascertain the character of the defences. Half of the largest pit (Pit 10, Fig. 15) in the group on the ridge adjoining was cleared by the quadrant method in order to examine its construction. Another cutting was made between this pit and the edge of the steep slope to test for occupation and the stratigraphic relationship of the big pit to the summit platform.

Initially a base line 150 ft (45.7 m) long was laid along the axis of the ridge and from it a grid of 15 ft (4.6 m) numbered squares was set out, shown by '+' on fig. 6. The squares were lettered A to H across the ridge though in neither direction was the nomenclature fully utilised. At the start, 2 ft (61 cm) baulks were left between the squares but in many cases these were eliminated as the excavation progressed. The work will be described in detail under three headings: (1) the defences, (2) the interior and (3) the external features. These sections will be followed by a summary of the phases and chronology of the occupation and a discussion. Since the original measurements were in feet and inches, these have been retained, with the metric equivalent added in brackets.

#### *The defences*

The character of the defences was complicated by refilled pits of a previous occupation on the hilltop (Pits 6, 7, 9; Fig. 6) and by subsequent digging of *rua* pits into the scarp. On each side, however, it was clear that there were lines of substantial postholes, often well behind the top of the scarp, indicating the position of the palisades.



Fig. 6. Plan of the excavations: for sections see Fig. 8.



On the south-east side, in Squares E6, 7 and 8 there were two alignments (Fig. 7): the outer consisted of holes 12 to 15 ins (30-38 cm) in diameter and 15 to 24 ins (38-61 cm) deep: the inner were smaller and shallower, 6 to 9 ins (15-23 cm) in diameter and 12 to 14 ins (30-36 cm) deep. In the cross-section Z on Fig. 8 it is clear that the postholes of the inner line are related to the latest stratum and therefore this palisade was an addition to, rather than a replacement of the more massive timberwork of the outer palisade. It formed, in effect, a double palisade. Both lines continue in E7 and 8, though the inner line has been obliterated by Rua 3: traces of deep holes of the outer line were found on the floor of Pit 6, and continuing beyond. Similarly on the south-west side in Square F9, there were indications of two periods of palisading: the two sets of holes were close together (Fig. 6) but the larger and deeper holes were at the top of the scarp and were related to the lower strata (Sections X and Y, Fig. 8). Some charcoal from the postholes has been sent for radiocarbon dating. The posts had been set up in post-pits, indicated by short lines of scarping on the plan, which were then repacked. This method of construction was not fully understood by the excavators in 1966, so in general only the post moulds were discovered and marked on plans. The smaller posts were in front of the larger ones and were associated with a narrow irregular bedding trench (Fig. 9); this presumably held the bases of the stakes between the uprights. A similar feature was found at Mount Roskill pa in Auckland (Fox 1980:48). The excavation was complicated by a drain which crossed the bedding trench at right angles and by the filling of an early pit or pits. This appears in the sections X and Y (Fig. 8) and is shaded on the plan (Pit 9, Fig. 6): the intervening area was not excavated. Since this side of the enclosure was open to attack from the level top of the ridge, there was a defensive bank at the top of the scarp. To make it, the filling of the underlying pits had been cut through and more soil dug from an irregular quarry hole. Subsequently the bank had collapsed, as shown in the sections by a thick sloping layer of

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Fig. 7. Palisade postholes of two periods in E7, on S.E. side of the enclosure.  
On right the scarp of an earlier terrace.  
(Photo R. Green)

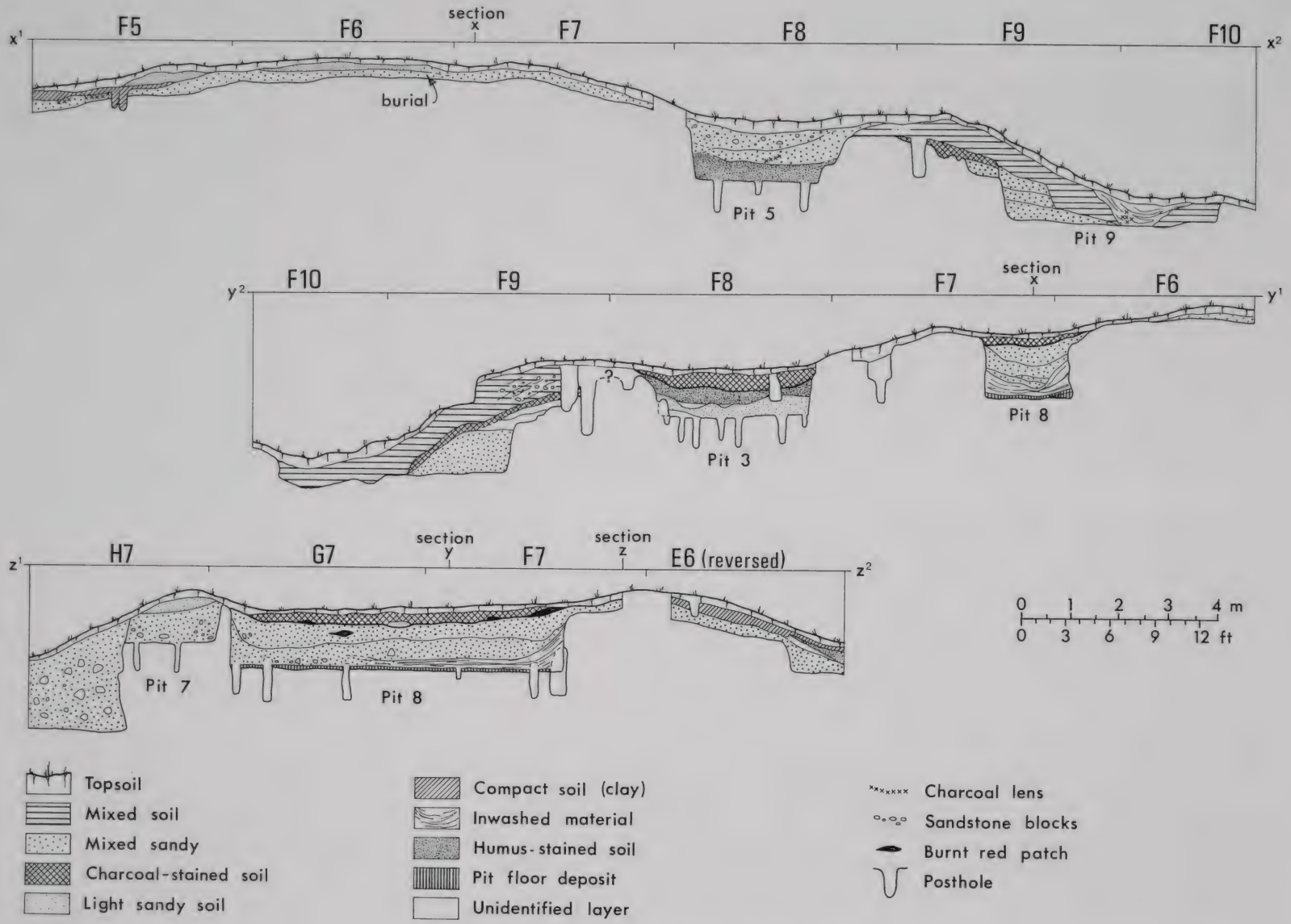


Fig. 8. Sections: for position, see Fig. 6.

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Figs. 9,10. 9. Palisade postholes and bedding slot in F9, cut across by drain. The ranging pole marks a late period palisade post and the defensive bank. 10. Postholes of the reconstructed palisade in F5. The tip of the ranging pole crosses the probable entrance gap.  
(Photos R. Green)

mixed soil, which partly refilled the quarry; finally a small V-shaped ditch was dug in the centre of the slip (Section X, Fig. 8). A slight surface hollow at the foot of the scarp on the south-east side suggests that the quarry ditch formed by this process may have continued around the corner.

At the opposite north-east end of the enclosure, which faced the slopes to the head of the gully, there was evidence in Square F.5 that palisades had been constructed at two periods but on the same alignment (Fig. 10). In two places the larger and deeper postholes of the early palisade had been cut into by the smaller postholes characteristic of the later palisade (Section X, Fig. 8), and others had been inserted in the intervals. There was also evidence that some early posts had been burnt and the holes covered with a layer of 'clay'. A sample of charcoal from the lowest layer has been submitted for a radiocarbon date.

Outside the palisades there was a group of six large postholes (Fig. 6); these were shallow holes 6-16 ins (15-41 cm) deep and presumably contemporary with the similar holes of the reconstructed late palisade. A possible explanation is that they belong to a

timbered entrance reached by way of the outer enclosure along the steep hillside (Fig. 3). A similar arrangement of external posts was found at the entrance to Pari Whakatau pa, Claverley in the South Island (Brailsford 1981: Fig. 134, 148). Alternatively they may belong to an early structure unrelated to the defences. The remaining north-west side, while also palisaded, was screened by the outer enclosure below. In the half-square H7, it was found that the defensive scarp was superimposed on the filling of an early pit (Pit 7, Fig. 6) and later had been cut into by a *rua* (Rua 2). The section (Z on Fig. 8) showed that some light soil had been heaped over the pit filling to heighten the scarp. Two substantial postholes were located which penetrated the pit filling, indicating there was also a palisade on this side. The line was continued beyond the pit by two postholes, 22 and 18 ins (56 and 46 cm) deep in the adjoining G7. Since the defensive scarp was cut into by an external pit visible on the surface (Fig. 3), as well as by the *rua*, it is probable that in the latest period the north-western defences were concentrated on the outer perimeter of the lower enclosure.

#### *The interior* (Fig. 6)

Two occupation areas were located in the interior, one at the higher north-east end and the other below the transverse dividing scarp. The remaining space in each division was taken up by a series of rectangular storage pits, Nos. 3-6 aligned axially, and Nos. 1-2 and 8 aligned transversely. None of these pits were visible on the surface before excavation. Elsewhere it was difficult to identify individual structures from the numerous small postholes and to establish a construction sequence from the scanty occupation deposits.

Traces of a timber structure, a working floor and a burial were detected in the upper occupation area (Squares F, G, 5-6-7). A series of slots 9-12 ins (23-30 cm) deep, suitable for bedding timber wall-slabs, and a row of small postholes aligned at right angles suggested the position of a rectangular house facing south-east. The front wall was indicated by two slots 8 ft (2.4 m) apart, whilst a third at right angles, together with another similarly placed depression, suggests there was a porch or shallow verandah. The row of three holes can be interpreted as central roof supports and two others give the position of the northern side wall in line with the verandah slab. The position of the other side and rear walls lay outside the area excavated. The maximum dimensions which allow the house to stand clear of the defences and of Pit 8 would be about 5x3 m overall. The completed house plan is shown in the reconstruction (Fig. 11).

In front of the house as thus conjectured, there was a working floor with a concentration of numerous small flakes and pieces of obsidian, including several cores. A hammerstone (Fig. 20), a polisher (Fig. 19), pieces of water-worn pumice and some red ochre were also present. On the south side of the house there was a long pit, Pit 8, 21 feet long, 5 ft 6 ins wide and 4 ft 6 ins deep (6.4 m, 1.7 m, 1.4 m). It had a central row of five deep postholes on the floor to hold timber supports for a ridge pole (Fox 1974:143); the largest one at the end was probably a replacement. Other postholes suggest that the floor was divided into compartments, either bins or racks for storing kumara or other produce. A seam of dark soil on the floor had accumulated when the pit was in use followed subsequently by slips from the sides, and then by a deliberate filling of mixed sandy soil (Fig. 12, and Section Z, Fig. 8). This was covered by a layer of dark soil with charcoal which should relate to the latest occupation of the site. Whether the long pit was in use when the house was first occupied is therefore uncertain, but since the two structures are in a similar alignment, it seems very likely. Charcoal from a posthole in the pit has been submitted for radiocarbon dating.



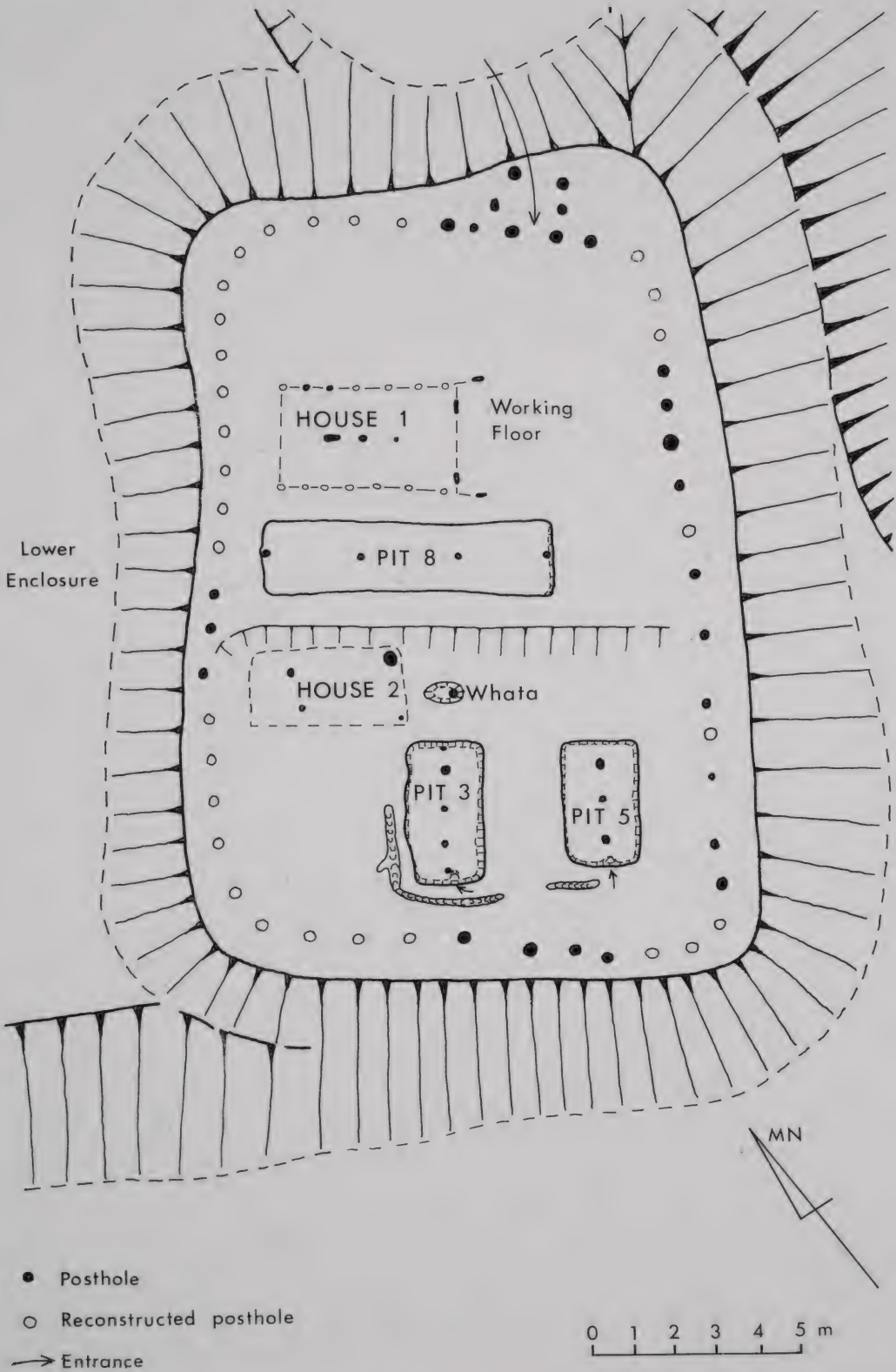


Fig. 11. Reconstructed plan of the palisaded enclosure on the summit.





Fig. 12. Long Pit 8 in cross-section, showing layering. (Photo R. Green)

To the north-east, just outside the proposed side of the house there was a small scoop firepit 4 ins (10 cm) deep. A small adze or chisel (Fig. 18) was also found here. North-east of that were a semi-circular depression and miscellaneous postholes and hollows, suggesting the area was used for domestic activities although no definite structures were found. This area of the summit had been covered by the excavation spoil dump and only a small part of it was able to be hastily examined on the last day during the fill-in.

A burial was found on the south-east side of F6: the depth was not stated but Green's notes record that the bones were 'just under the floor of the later occupation and after the infilling of long pit 8'. The grave presumably cut through the lower layer shown in section X (Fig. 8). The remains consisted of 'two articulated legs with pieces of pelvis attached'. A skull was found in the adjoining baulk, from which it was deduced that 'this is likely to be a burial in that the remaining bones are articulated and the head is in the correct position if the vertebral column now missing is inferred'.

Dr Philip Houghton of the Anatomy Department at Otago University Medical School kindly examined the bones and reports as follows:

'These very fragmented, eroded remains are from a mature Polynesian (Maori) male. The teeth offer the most data; they are severely worn, particularly on the first molars, and in my experience this places them fairly securely in the later prehistoric era, say AD 1550-1800. The wear pattern is clearly not of the 'fern-root' variety. We now have reasonable evidence that the fern-root plane on teeth is indeed most likely to have arisen from the prolonged chewing of the rhizome, so it is reasonable to conclude that this individual did not have it in his diet. I would tentatively age him as 26-32 years.'

The other occupation area was located in Squares G7 and 8 at the foot of the low transverse scarp (Fig. 6). It was superimposed on a collapsed store pit, Rua 1, which had

been partly filled with stones. The *rua* measured 2 ft (61 cm) deep with undercut sides, expanding from 18 ins (46 cm) at the mouth to 4 ft (1.2 m) at the bottom. A row of small storeholes, Ruas 4, 5 and 6, 2 ft (61 cm) in diameter and 18 ins (46 cm) deep were thought to be similar constructions of the early period. There was a rectangle of trodden floor, 12 ft (3.7 m) long and 6 ft (1.8 m) wide from the foot of the scarp, beyond which it faded out. There was a hearth with 6 ins (15 cm) of burnt soil and charcoal with a 17 ins (43 cm) deep stakehole at the edge, perhaps to hold a forked support for a spit. Some burnt rushes (*Juncus* sp.) were also found here. Many flakes of obsidian, worked and other worn pieces of pumice (Figs. 23, 24) as well as a few shells (*Paphies/Mactra* spp.) were recovered from the floor deposits. Only two or three postholes were located at the edges of the floor (Fig. 6) but others may have been missed in the filling of the collapsed Rua 1. The superstructure is thus ill-defined: it could have been a lean-to construction, a cooking shed rather than a sleeping house.

A deep posthole in a well-cut post pit was located outside and to the east of the floor. The unusual profile shown in Section Y (Fig. 8) suggests that the post was intended to stand alone: it probably supported a rack or a small structure (*whata*) in which choice provisions were kept; both are known from early nineteenth century drawings (Murray-Oliver 1968: Pl. 19.). A fine polished argillite adze (Fig. 17) was found in loose soil nearby.

South of the occupation area and structures of Squares F and G7 there were two pits, Nos. 1 and 2 set transversely and four others set longitudinally in a neat row across the enclosure (Fig. 6). Of these Pit 6, 3 ft 2 ins (1 m) deep, clearly antedated the construction of both the early and the late palisade; the postholes in alignment with those in E6-7 were found in the filling and those of the early palisade penetrated to the pit floor. There was also a *hangi* on top of the pit filling, 11 ins (28 cm) deep and containing 5 lbs (2.3 kg) of burnt stones. The small Pit 4, only 18 ins (46 cm) deep must also be assigned to an early date since one side of it had been cut away by the adjoining Pit 5 and the filling of 'clean sandy loam' was homogeneous. A buttress step indicated an entry at the upper end and there were two drainage channels for surface water at the lower end. Pits 1 and 2 were rock-cut pits, 2 ft 6 ins (76 cm) deep with clean fillings and their well-cut sides intact, suggesting that they had been little used and deliberately refilled at an early date. They were described by Green as 'bin pits', but since both had two central posts on the long axis, they must have been roofed.

This leaves the largest pits, 3 and 5, as likely to be of late date and in-use when the nearby house or cooking shed was last occupied. Pit 3 was 3 ft (91 cm) deep with a sandstone rock floor; there was a rock-cut step at the lower end indicating the entry and a central row of six postholes for holding the roof supports (Fig. 6 and Section Y, Fig. 8). Since the holes are unnecessarily close together, some were probably dug for replacements when the pit was re-roofed. There was an external drainage gutter around the lower side and end. The pit filling consisted of sandy soil, with a seam of charcoal at the bottom, which had accumulated naturally to a depth of 2 ft (61 cm). The remaining infilling was burnt soil with charcoal, probably the throw-out from a *hangi*. A large posthole 11 ins (28 cm) square was found in the upper filling (Section Y, Fig. 8); it is likely to be of historic age.

Pit 5 was 4 ft (1.2 m) deep: like Pit 3 it had an entrance step at the south eastern end and two deep square postholes with a small shallow one between them on the centre line for roof supports. In the middle of the floor there was a patch of burning, probably the remains of a fire lit to disinfect the pit (Fox 1975:203). The lower filling was of dark humus-stained soil, probably the remains of a collapsed roof with a covering of earth; above this was a deposit of loose sandy stony soil which had slipped from the sides (Fig. 13 and Section X, Fig. 8). There was a short length of external drainage gutter at the lower end of this pit, similar to Pit 3. Green was of the opinion that this pit was open at the time of the abandonment.

#### *External features*

The largest pit in the group on the ridge south-west of the enclosure, Pit 10, was excavated by the quadrant method in Squares F10-11 and E11-12 (Figs. 14, 15). In this way half of the pit floor was uncovered in opposite quarters and two cross-sections were obtained (Fig. 15). The method is economical in terms of the bulk of soil to be moved, but it is not as satisfactory as total clearance in terms of structure.

The pit measured 20 ft (6.1 m) square externally and had a low bank on the windward north-west side. It was surprisingly shallow, the floor being only 2 ft (61 cm) below the turf. The sides were dug in sandy loam; there was a thin trampled layer of stained soil on the pit floor in which a series of postholes filled with clean sand was detected (Fig. 14). Apart from one small slip from the side (Section W, Fig. 15) the filling consisted of dark soil and rubbish, including 18 lbs (8.2 kg) of burnt *hangi* stones, a few snapper bones, some charcoal and many shells, obviously a deliberate infilling when the pit was disused. The shells were almost entirely small *pipi* (*Paphies australis*) with a very few cockles (*Chione stutchburyi*) and *Macra* sp. A sample was sent for radiocarbon analysis. Among

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Fig. 13. Pit 5, showing central row of postholes and lower filling of dark soil, probably from the collapsed roof. (Photo R. Green)



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Fig. 14. View of Pit 10, during excavation. (Photo R. Green)

the numerous postholes, five rows were distinguished by the excavator as structurally significant. The rows were consistently spaced in both directions, although there were minor irregularities. The holes in the rows varied in depth from 14 to 24 ins (36-61 cm); the remainder were smaller and shallower, nearly all less than 12 ins (30 cm) deep and make no discernible pattern (Fig. 15). There were no internal drains on the pit floor and no indication of an entry was found in the area excavated.

The interpretation of the roofing of this large square pit is difficult, particularly since it lacks an obvious axis. On the assumption that this lay approximately NE-SW, it would appear that the weight of the roof was carried cantilever fashion on rows 2 and 4. These contain most of the deeper posts, 17-24 ins (43-61 cm), whereas in the centre row 3, the posts were only 15-16 ins (38-41 cm) deep. The gabled roof however, would need a ridge pole at the apex carried on the central supports. Rafters would then rest on the intermediate horizontals and be tied at the apex with fibres. The spaces between would be filled with interwoven reed matting and the whole covered with thatch. It is known from some districts that pit roofs were earth-covered as a protection against frost (Best 1916:93), but at Maioro this should not have been needed, though it would help to explain the numbers of close-set posts to carry the roof. The two remaining side-rows, 1 and 5, are not necessary for roofing. As previously suggested (Fox 1974:146), they probably belong to the framework of a series of bins or racks at the sides of the pit, used for storing either different varieties of kumara, or crops belonging to different families in the settlement.

Between Pit 10 and the defensive scarp of the summit platform remains of another very large pit, Pit 9, were discovered. Its north-east end was intact as was a remnant of its south-east wall (Fig. 6, Squares F9-10). A size over 14 ft (4.3 m) for one side is indicated for it.

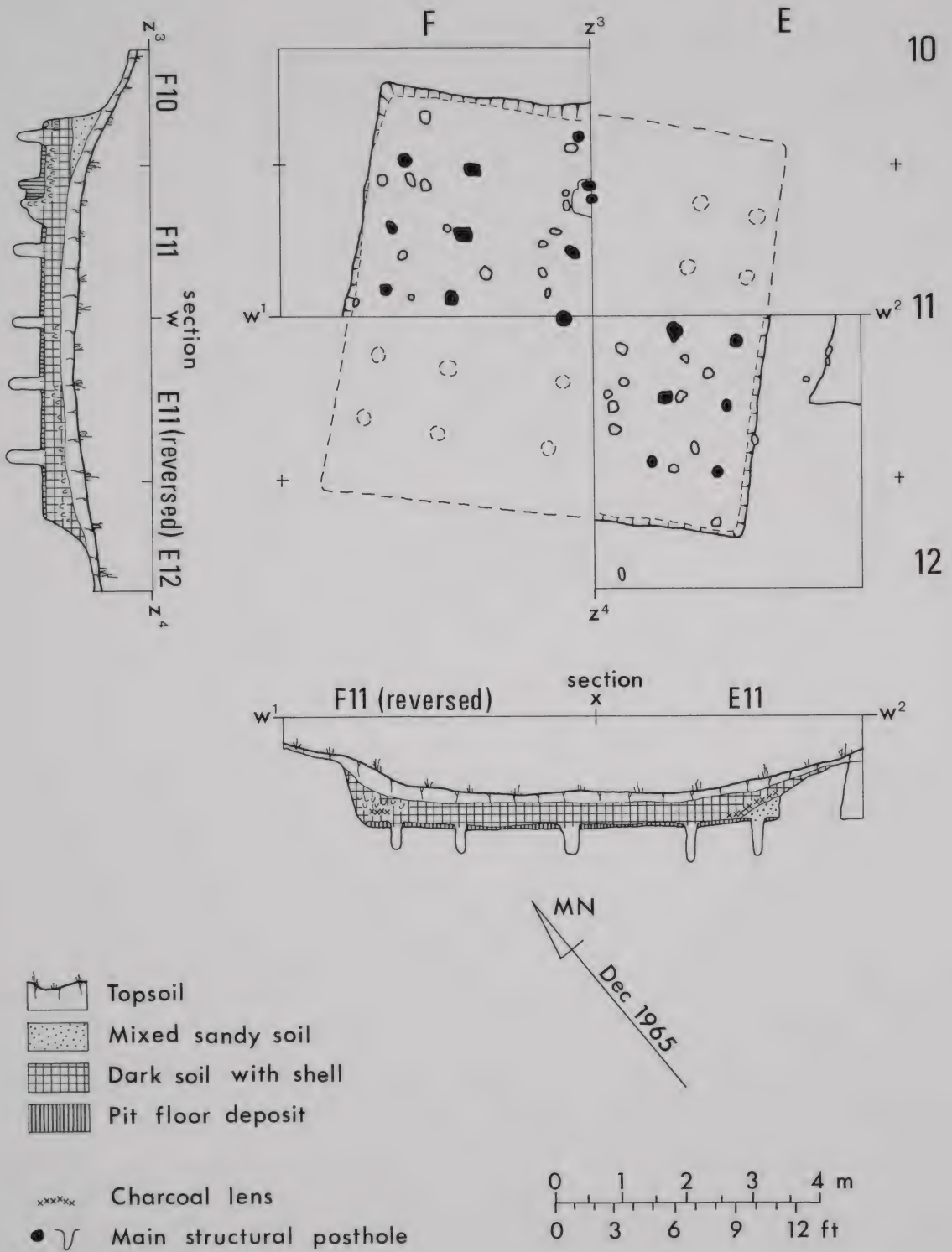


Fig. 15. Pit 10. Plan and section.



Two more squares, C-D11, were opened on the slope to the east of Pit 10 (Fig. 3). They were unproductive of structures, though the ground appeared to have been levelled. A *hangi* was found just below the turf and a small imported argillite adze (Fig. 16) was found in made ground at a depth of 17 ins (43 cm) together with a sandstone rubber (Fig. 21).

### *Catalogue of finds*

Numbers in brackets refer to the original Catalogue in the Anthropology Department, University of Auckland.

#### Stone

Adze (Fig. 16), dense grey polished surface, metasomatised argillite from Ohana quarries, D'Urville Island. A small implement with angular bevelled sides: the cutting edge shows only a few marks of use.

Sq. C11, In mixed soil, 17 ins (43 cm) deep (No. 1997); with sandstone rubber (Fig. 21)

Adze (Fig. 17), dense greenish-grey polished surface, metasomatised argillite from Ohana quarries, D'Urville Island. The cutting edge shows it was little used. There is hammer-dressing visible on the sides and lower end, whilst the sloping butt has acquired a surface polish from friction in the haft.

Sq. G8, 'In loose brown filling beside posthole'; (No. 2026).

Adze or chisel (Fig. 18), dark polished surface, greywacke, probably from a local source such as a river or beach pebble. Part of the butt is left rough for hafting,

Sq. G5/6, Top layer, NE of House 1. (No. 2013).

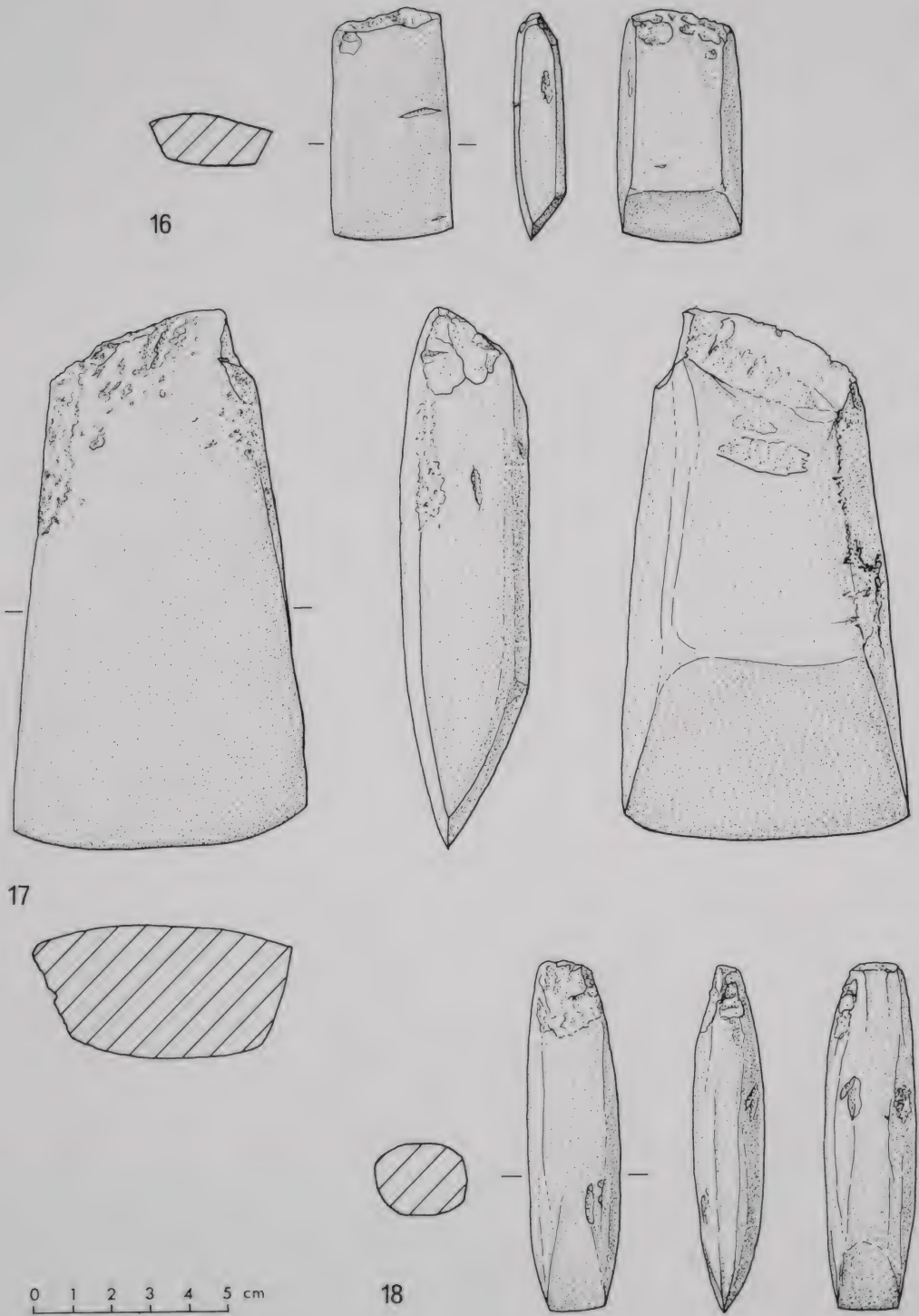
Figures 16 and 18 are both small implements suitable for use as chisels by a wood carver. Figures 16 and 17 are made of imported material from the South Island, the metasomatised argillite characteristic of the Nelson mineral belt. The source has been identified by Mrs K. Prickett as the Ohana quarries on D'Urville Island (Walls 1974). A third small adze in the same material was found at Whiriwhiri (Waiuku Museum no: 2252) and part of another from Wattle Bay is in the Brambley Collection, Auckland Museum. (N. Prickett, report in preparation). The adzes are likely to have been imported as finished products (Challis 1976:484) and, as such, will have had a prestige value for the owners. Whilst the large archaic argillite adzes of Type 1A are well known as is their distribution to the Wairarapa (Prickett 1979) and Hawkes Bay (Fox 1982, Fig. 4.1.), the later products of Type 2B and other variants are less generally appreciated. The Maoro adzes indicate that an export trade continued into the fifteenth and sixteenth centuries, probably in the form of gift exchange. They indicate an early trade route to the west coast of the North Island from D'Urville Island, perhaps via Taranaki.

Stone polisher (Fig. 19), a greenish metamorphosed greywacke with white quartz inclusions. The rounded edges and sides have been hammer-dressed and there is a circle of highly polished surface on the flat top, presumably made by use.

Sq. F6, Working floor: above lower layer (No. 2038).

Hammerstone (Fig. 20), a waterworn pebble of andesite breccia, probably from the Waitakeres originally, with battered surface at narrow end.

Sq. F6, Working floor: lower layer (No. 2080).



Figs. 16-18. Stone adzes.

Rubbing stone (Fig. 21), fine grained, pale brown quartz sandstone: part of a thin slab worn hollow by extensive use on both sides.

Dr Kerry Rodgers of the Geology Department, University of Auckland reports that "this is a very mature well-sorted quartz sandstone, a silica cement. It is not of local origin, unless of some very localised outcrop, and is possibly from Taranaki or the South Island. It resembles the Sydney — Hawksbury sandstones in Australia and conceivably reached the Waikato as ship's ballast in the 19th century."

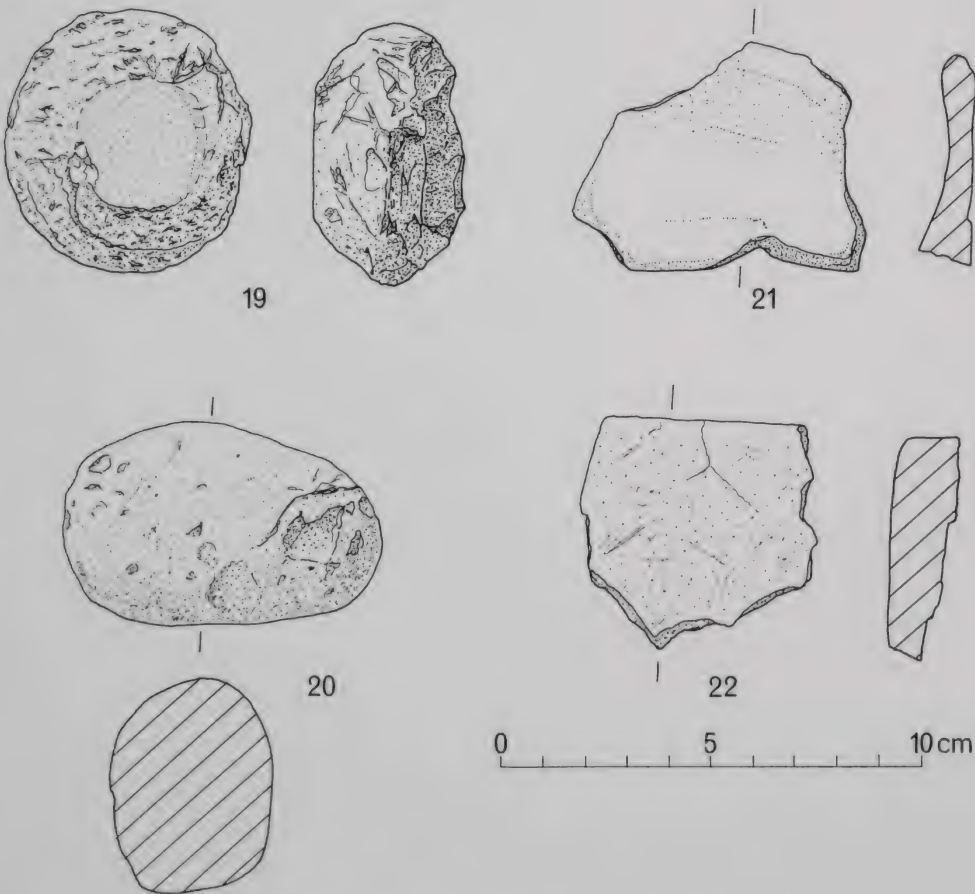
Sq. C11, 9 ins (23 cm) down, under surface layer (No. 1998/2).

Rubbing stone (Fig. 22), dark surfaced basalt: a broken rectangular thin slab with smooth top and sides showing thin lines and other marks of use.

Sq. F9, no details. (No. 2030).

Pumice

All the excavated areas produced pieces of water-worn pumice varying from small scraps to blocks 27 cm long. The material is obtainable from the sandy beaches at the mouth of the Waikato River and can also be found on the Tasman Sea beaches below the



Figs. 19-22. 19. Stone polisher. 20. Hammerstone. 21,22. Rubbers.

Maioro gap. It will have been carried down river from the Taupo region. The material was brought to the settlement for use as an abrasive, or for working into floats for fishing nets as Fig. 23, or possibly for carving (Fig. 24). A large block from Onewhero on the south bank of the river was carved into a head with a container for bones at the back and set up in a *wahi tapu* (Archey 1977:Fig. 192)

Pumice (Fig. 23), worked: the sides have been trimmed and the upper surface smoothed, with a circular depression *ca.* 30 mm in diameter roughly cut in the centre. Perhaps an unfinished net float.

Sq. G7, 'In hole adjoining G8', probably a posthole at edge of cook-house floor (No. 2019).

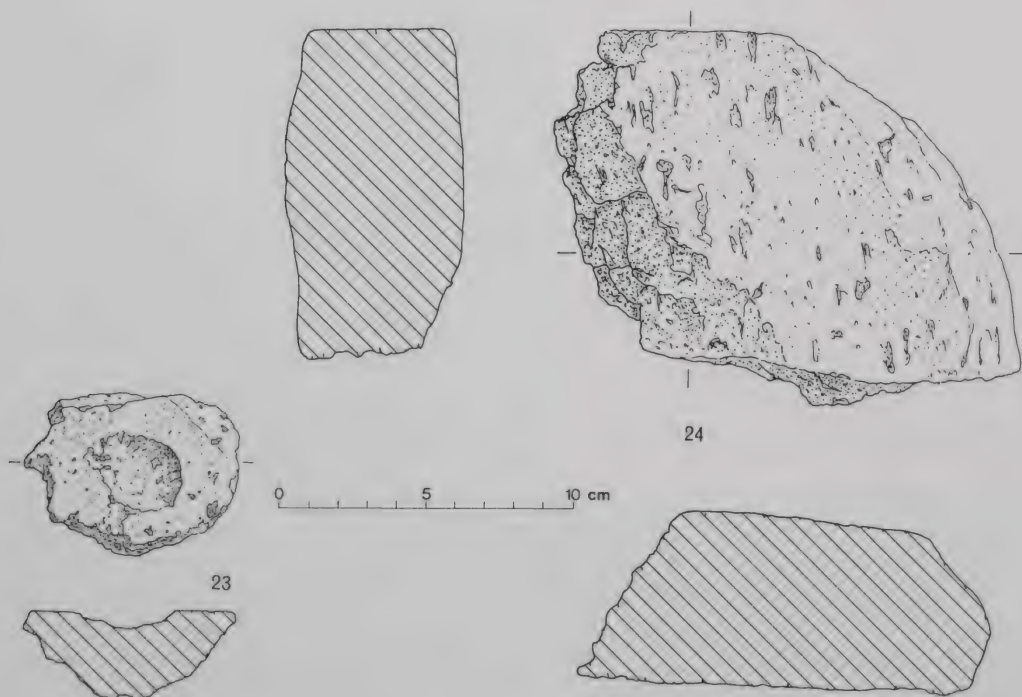
Pumice (Fig. 24), block: both sides and base have been flattened, and the curved side has been smoothed and rounded. The flat base suggests the slab may have stood upright and perhaps belong to a carved figure.

Sq. G7 extension, no details but close to cook-house floor (No. 2021).

Obsidian

Approximately 960 small pieces of obsidian were recovered from the excavations. Their probable sources, as determined by Dr Bruce McFadgen from a visual examination, are as follows:

Mayor Island .....	387
Great Barrier Island .....	487
Not identified .....	87



Figs. 23,24. Worked pumice objects.



These very tentative results are in line with other sites in the Auckland region (Green 1962, 1964; Ward 1973) showing that these two islands were the principal sources of supply.

Most pieces were unworked trimming flakes or broken scraps, some very small: five pieces were definitely worked, 226 showed signs of use and there were three small worked cores (Nos. 2032, 2041, and 2075). It was clear from the presence of cortex that some material had been brought to the site as weathered nodules and had been worked there. The principal concentration of flakes was found on the working floor in F6 extending into E6, together with a hammerstone (Fig. 20) and a stone polisher (Fig. 19).

It appears from the recorded stratified finds that the obsidian was worked and used principally during the early occupation of the settlement. It occurred consistently in the lower layers in E6 and 7 and in small numbers in the filling of Pits 1, 6 and 7. It is poorly represented in the upper occupation layers and in the filling of long Pit 8 and in the late Ruas 2 and 3 which post-date the defences. There were only two pieces in the filling of the large external Pit 10.

Lower occupation layers .....	565
Early pits filling .....	7
Upper occupation layers .....	73
Late pits and <i>rua</i> filling .....	16

#### Animal bones

These were examined by Diane Foley (Mrs Spencer): they were all from hares (*Lepus capensis*) or rabbits (*Oryctolagus cuniculus*) with the exception of one radius shaft possibly from a dog (*Canis familiaris*). The propensity of rabbits to burrow in soft sandy soils is well known to archaeologists.

#### *Chronological summary and discussion*

The excavations demonstrated that there had been several major changes in the character of occupation on the summit platform of the Maioro hilltop. The first phase was an undefended or open settlement, known only from a series of filled storage pits Nos. 6, 7 and 9, which underlie the defences and from a *rua* (Rua 1) which was beneath the House 2 or cooking shed. The small scarp along the south-east side probably relates to a terrace of this first phase, since it was covered by a slip from the defences (Fig. 7, and section Z, Fig. 8). The two imported argillite adzes (Figs. 16, 17) can probably be assigned to this early period also.

The second phase saw the beginnings of the palisaded enclosure: pits and the *rua* of the first phase were filled in and a series of large deep postholes were dug, 1.5 - 2 m apart, and up to 0.75 into the natural soil to hold the uprights of a palisade. The natural slopes around the knoll were steepened by scarping, and the soil obtained was heaped-up around the base of the palisade (Sections, Fig. 8). In fact along the more vulnerable south-west end, extra soil was quarried from the foot of the scarp to make a higher bank across the ridge (Sections X and Z, Fig. 8). The entrance was probably at the north-east end.



It is likely, though it cannot be proved, that a sleeping house, House 1, was constructed at this time at the upper end of the enclosure (Fig. 11). It had a porch facing south-east, sheltered from the prevailing sea winds and there was a working floor in front of it on which many obsidian flakes, a polisher (Fig. 19), and a hammerstone (Fig. 20) were found; and a long narrow storage pit, Pit 8, along one side. On the slightly lower part of the enclosure to the south-west, a much slighter rectangular structure, House 2, was built on top of the filled-in Rua 1. It contained a *hangi* so may have been a cooking shed rather than a sleeping house. Three small roofed storage pits, Pits 1, 2 and 4, were probably in use together with a row of small store holes labelled as Ruas 4, 5, 6 on Fig. 6.

In the third phase, the defences were reconditioned and strengthened. Some palisade posts near the entrance had been burnt, suggestive of an attack but this was an isolated instance. The palisade was repaired on the same alignment and extra smaller posts inserted between the main uprights. The approach to the entrance gap was defined by external timber uprights set in shallow postholes similar to those in the new palisade. At the opposite south-west end, the palisade had been similarly reconstructed, though the new posts were inserted just in front of the old ones and linked by a shallow bedding trench (Section Y, Fig. 8 and Fig. 9). On the north-east side, the shallow posts of the new palisade were dug behind and above the earlier line: it seems likely that on this side the defence was doubled (Fig. 7). A double palisade was found on Mount Roskill in Auckland in 1961 (Fox 1980: Fig. 4, 48-9). There is no evidence that the site was abandoned at this time and it must be presumed that both 'houses' continued in use. Pits 1-2 and 4 and the *rua* were filled in and replaced by Pits 3 and 5, with greater storage capacity; these were both entered by a step on the lower side and were provided with external drains. Another new feature was a *whata* or a storage rack, resting on a deeply bedded post close to the cooking house.

In the last phase, the defences were put out of action. On the south-east side, a large *rua*, Rua 3 was dug through the double palisades and on the north-west, Rua 2 and another pit were cut into the scarp from the lower enclosure (Fig 3). On the ridge to the south, the existence of the large roof of the 6 m square Pit 10, and of others in the group nearby (Fig. 3) would have blocked the view along the ridge and rendered the defences ineffectual. In the interior, the remaining pits filled gradually as the sides collapsed and roof timbers were removed; burnt rubbish was deposited on top of the accumulation in Pits 3 and 8. A shallow burial of a man aged between 26 and 32 years, close to Pit 8 at the edge of the former working floor, presumably can be assigned to this period: its presence may have rendered the summit platform *tapu*. It can be concluded that in this phase, the site as a defensive settlement was abandoned but not deserted: the people probably lived in scattered groups on the lower terraces and in the vicinity, with a communal pit store on the ridge.

### Dating

At the time of going to press the dates of five samples of charcoals and one of shells submitted for radiocarbon analysis had not been received from the D.S.I.R. Nuclear Research Laboratory. Without them, it is only possible to make a general assessment of the chronology.

The significant archaeological factors are:—

1. The imported argillite adzes of 2B types (Figs. 16, 17); these are likely to date from early in the classic Maori culture, the late 15th or 16th century, though little is known about the 2B varieties which succeeded the archaic types.
2. The burial, which is stratigraphically late, is assigned by Houghton to the later prehistoric period, A.D. 1550-1800 (see above).
3. The two house structures within the enclosure show little sign of alteration and relate to a single plan (Fig. 11). This suggests a relatively short period of occupation, say 100 years or four or five generations of a chiefly family. During this time the palisades were reconstructed and strengthened once.
4. Four phases of pit construction have been detected, one preceding the palisaded enclosure and one post-dating it. This suggests that the occupation of the Maioro ridge was prolonged and remained the territory of one kin-group of the Ngati Kahukoka, probably from the sixteenth century onwards. The absence of any European artefacts indicates that the site was not occupied in the early nineteenth century.

### Conclusion

The 1966 excavations were successful in producing for the first time in New Zealand archaeology a coherent plan for the layout of a summit platform (*tihi*) (Fig. 11). Admittedly the area is a small one, 18 x 12 m, and the plan may not be applicable to a large and strongly fortified pa; nevertheless it has important social implications. The two small house structures indicate that it was normally occupied by a family group, probably the chief man and his dependants. The superior dwelling with its porch and centre posts was in the upper part of the enclosure, in a position commanding a view of the entrance through the palisade. In front of it there was a space used at some time for a working floor for obsidian, indicating the presence of a craftsman, as does the chisel or small adze (Fig. 18) found close by. The long narrow Pit 8 alongside the house is an unusual type with a maximum capacity of 517 cubic feet (14.6 m<sup>3</sup>); pits of similar form at Kauri Point open settlement (Green 1963), and elsewhere, have been tentatively identified as a store for a ceremonial feast (Law n.d.). All these factors support the notion that this was a chief's house, a *rangatira* of the Ngati Kahukoka. The other smaller and slighter structure, perhaps of lean-to construction, has been tentatively identified as a cook-house; it was placed a little lower down the slope and in proximity to two kumara store pits of normal size. It could also have been used as a sleeping house for women or slaves, and as a domestic activity area.

Allowing 5 or 6 adults per dwelling (Fox 1976:24-5) it can be estimated that not more than 10 to 12 people lived on the summit platform. Others, presumably of lesser social standing, would have had their houses in the outer enclosure where there are 5 or 6 pits. Allowing two pits per family by analogy with the interior layout, two or possibly three more households can be deduced, making a total adult population of 20 to 30 in all at Maioro. This would be sufficient to scarp the whole enclosure and to cut and build the palisade in a reasonable time. It would not, however, provide enough men to defend the perimeter in case of an attack and in an emergency, assistance might be obtained from the other nearby open settlements (N51/65 and 88; Fig. 2).

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The task of Fox's field survey of sites in the Maioro locality (Fig. 2) was greatly assisted by Steve Edson's expert examination of the relevant air photographs. She must thank the owner Mr C. Thompson and several other land owners who allowed her to visit the sites on their land. The records have been placed in the New Zealand Archaeological Association's Waikato file (Filekeeper, Mr S. Edson) at the Waikato Art Museum in Hamilton.

The final form of the maps, plans and sections are the work of Caroline Phillips, draughtswoman in the Anthropology Department at Auckland University; they owe much to her skill and intelligence.

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